

REMARKS

This application is amended in a manner to place it in condition for allowance at the time of the next Official Action.

Claim 1 is amended to include the features of claim 39. Accordingly, claim 39 is cancelled.

Claims 5, 45, 49, 54, and 55 are amended so that the features are described in manner consistent with the specification. Support for the amendment to claim 5 may be found, for example, at page 4, line 3. Support for the amendment to claim 45 may be found in the discussion of the Figures on page 11 in view of page 4, line 26. Support for the amendment to claim 49 may be found, e.g., in the originally filed claim 11 in view of page 5, line 35. Support for the amendment to claims 54 and 55 may be found, e.g., at page 5, lines 16-18.

Claim 56 is amended for clarity.

Claims 28-38 are cancelled, without prejudice, as applicants reserve the right to file one or more divisional applications directed to the cancelled subject matter.

Claim 60 is cancelled without prejudice, as it is directed to the use of the system.

Claims 1-5 and 40-59 remain pending in the application.

Objection to the Specification

The Official Action objected to the phrase "a phase that has a capacity to form water soluble phosphate" for being

unclear. However, the formation of such a phase is described on specification page 6, lines 19-23:

"The addition of water-soluble phosphate may be achieved by addition of a phase that forms phosphate ions during hydration ( $P_2O_5$ , active glass containing phosphor, bioglass, Apatite-Wollastonite glass e.g.). Additives of elements that deliver phosphate in water, such as tricalcium phosphate, alkali salts, are also included in the concept of 'addition of water-soluble phosphate'."

It is believed that this statement in view of the discussion at page 8, lines 8-17 would have rendered the phrase clear to one of ordinary skill in the art.

The specification was also objected to for not providing proper antecedent basis for the claimed subject matter of claims 3 and 4.

The Official Action points to MPEP §608.01(o), which refers to new and amended claims, and 37 CFR 1.75 (d) (1), which refers to "the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description".

In claims 3 and 4, however, these features were previously recited in original claims, and the "meanings" of the terms and phrases are ascertainable by reference to the description, e.g., at pages 1-10 of the specification.

Moreover, applicants respectfully note that claims should not be objected to for lacking description in the disclosure if they are original claims, e.g., see MPEP §608.01(1).

Therefore, withdrawal of the objection to the specification is respectfully requested.

Claim Rejections-35 USC §112

Claims 5, 45, 49, 54 and 55 were rejected under 35 USC §112, first paragraph, as not complying with the written description requirement. This rejection is respectfully traversed.

As to claim 5, the claim is amended to recite the particle size consistent with page 4, line 3 of the specification.

With respect to claim 45, page 11 states, "Fig. 1 shows how a coating layer 2 of CAH-HAP has been applied and hydrated. Fig. 2 shows how an extra, outermost layer 3 has been applied on the coating 2, just before the implantation is to begin...The outer layer 3 is composed of non-reacted CA (without any hydration liquid) that comprises phosphate. The size of the crystals in the phases in layer 2 and/or 3 is 5  $\mu\text{m}$  at the most, preferably less than 1  $\mu\text{m}$ ." The powder material of claim 1 is described as comprising a binder phase that essentially consists of a calcium aluminate based cement system, which is designated as CAH according to page 4, line 26 of the specification. Thus, claim 45 is amended in a manner consistent with page 11 in view of page 4, e.g., the crystals of a calcium aluminate based cement system are 5  $\mu\text{m}$  at the most.

As to claim 49, this claim is amended in a manner consistent with the originally filed claim 11 in view of page 5, line 35.

As to claims 54 and 55, these claims are amended in a manner consistent with the specification regarding "water soluble phosphate having the capacity to be formed", i.e. "a phase that has the capacity form said water soluble phosphate". See, e.g., page 5, lines 16-18.

Therefore, withdrawal of the written description requirement rejection is respectfully requested.

Claims 1-4 and 39-60 were rejected under 35 USC §112, second paragraph, as being indefinite. This rejection is respectfully traversed.

Specifically, one position held was that the specification discloses compounds, but not phases that have "the capacity to form water soluble phosphate". However, as described beginning at line 19, page 6 of the specification, "addition of water-soluble phosphate may be achieved by addition of a phase that forms phosphate ions during hydration ( $P_2O_5$ , active glass containing phosphor[phosphate], bioglass, Apatite-Wollastonite glass e.g.)." Moreover, page 8, lines 15-16 of the specification describes water soluble phosphates that form ions in the liquid. Thus, the meaning of "phases that have the capacity to form water soluble phosphate" is described in the specification by (1)

examples of such phases and (2) the ions that would result from a water soluble phosphate, and, the meaning would have been clear to one of ordinary skill in the art.

Claim 47 was rejected because it was unclear if the grains were of the water-soluble phosphate or the phase. However, the specification defines the grains the water soluble phosphate, e.g., at page 4, lines 3-4, or as the phase, e.g., at page 5, lines 28-29. Thus, the claim is believed to be definite.

Regarding claims 54 and 55, these claims were rejected for being duplicates, as claim 55 recited an intended use for the hydration liquid. However, claim 55 is amended to recite that the hydration liquid is a bonding system, which distinguishes claim 55 from claim 54.

Regarding claim 56, this claim was rejected because hydro-ammonium phosphate is not an ion. Accordingly, the claim is amended to reflect this.

Therefore, withdrawal of the indefiniteness rejection is respectfully requested.

#### Claim Rejections-35 USC §102

Claims 1-3, 39-41, 43, 45-50, 53-56 and 58 are rejected under 35 USC §102(b) as being anticipated by BU.S. 6,143,069 ("BROTHERS"). This rejection is respectfully traversed.

Claim 1 is amended to recite that the aluminate based cement system has a larger mole content of calcium than aluminum, i.e., as previously recited in claim 39.

BROTHERS refers to a completely different field of technology than the claimed invention.

BROTHERS uses calcium aluminate in a range from 15% to 45% by weight of the composition (col. 3, lines 9-11). BROTHERS teaches that "the calcium aluminate can be any commercial grade calcium aluminate suitable for use as a cement" (col. 3, lines 4-5). There is however nothing to indicate to one of ordinary skill in that art that such cement would have a larger mole content of calcium than aluminum, e.g., as now recited in the independent claim 1.

In order for the calcium aluminate used not to shift the Ca:Al ratio to an aluminum surplus, the composition of the aluminate would have to be at least minimum surplus, the composition of the aluminate would have to be at least  $\underline{2}\text{CaO} \cdot \text{Al}_2\text{O}_3$  (i.e.  $\text{C}_2\text{A}$ ), if such would exist.

In a conventional commercial grade calcium aluminate, however, the following calcium aluminate compounds may be present:  $\text{C}_3\text{A}$ ,  $\text{C}_{12}\text{A}_7$ ,  $\text{CA}$ ,  $\text{CA}_2$  and  $\text{CA}_6$ . Of these five compounds, only the first mentioned, i.e.  $\text{C}_3\text{A}$ , has the ability of shifting the Ca:Al ratio in the direction of the claimed invention. In the absence of any specific indication to the contrary, it is highly

unlikely that the calcium aluminate essentially would consist of only the compound  $C_3A$ .

Thus, BROTHERS does not anticipate the claimed invention, and withdrawal of the rejection is respectfully requested.

BROTHERS also fails to render obvious the claimed invention.

Indeed, one of ordinary skill in the art would have no reason to modify BROTHERS to so as to have a larger mole content of calcium than aluminum.

Fly ash (i.e.  $3Al_2O_3 \cdot 2SiO_2$  — emphasis added), which is generally included in the composition of BROTHERS in an amount of from 25% to 45% by weight of the composition, will clearly shift the ratio of Ca:Al to an aluminum surplus, i.e. in the opposite direction of the claimed invention, since only Al is contributed to by the fly ash. Any composition taught, or suggested, by BROTHERS will therefore clearly fail to fulfill the requirement of a larger mole content of calcium than aluminum.

Thus, BROTHERS fails to provide any reason to even approach the claimed invention.

#### Allowable Subject Matter

Applicants acknowledge with appreciation the indication of the allowable subject matter of claim 5.

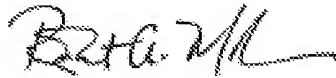
Conclusion

In view of the amendments to the present application and the foregoing remarks, therefore, applicants believe that the present application is in condition for allowance at the time of the next Official Action. Allowance and passage to issue on that basis is respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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